

### **REMARKS/ARGUMENTS**

The foregoing amendment is presented in response to the Office Action of February 6, 2004 in the above-identified application and for expediting prosecution.

#### **Status Of Claims**

The claims in the case are: 9 to 12.

#### **Summary Of The Invention**

The present invention relates in general to electrophotosensitive materials which are used in photocopying machines, for example. Various methods have been developed in the past to improve electrophotosensitive materials. The present application explains on page 2 that if an intermediate layer is absent, the charge generated on the bottom of the photosensitive layer is removed when the photosensitive layer is subjected to exposure to light and the resulting image will tend to appear foggy. Other problems also mentioned are insufficient adhesion and unwanted black dots formed on the image. Hence the prior art has sought to develop intermediate layers to prevent the migration of a charge, as well as other improvements. Thermoplastic resins were not selected for that purpose after it was determined that the intermediate layer can be dissolved and deteriorated and, therefore, the prior art has moved toward the use of thermosetting resins as the binder resin for the intermediate layer. However, if the heat treatment to cure the thermosetting binder resin is not sufficiently carried out, the degree of curing of the thermosetting resin is inadequate which leads to further problems.

It has been discovered by the applicants that the technical problems which have been experienced in the prior art can be avoided, and at the same time a good image can be formed which has a low residual potential as compared with the prior art and which is free from fog.

Applicant has determined that the water contact angle is a factor which has a correlation with the curing degree of the thermosetting resin and is easy to measure. It has been found that the residual potential decreases with an increase in the water contact angle while a change in the residual potential nearly disappears when the water contact angle exceeds a certain value.

It has been determined that an improvement can be obtained when the water contact angle of the surface of the intermediate layer is not less than a value ( $A^\circ$ ) represented by the formula:  $A^\circ = B^\circ - 2^\circ$  in which  $B^\circ$  is a water contact angle corresponding to an intersection of a first approximate linear line and a second approximate linear line in a correlation curve.

The method of the present invention as recited in claim 9 comprises forming an intermediate layer containing a thermosetting resin on a supporting substrate, carrying out a heat treatment so that the water contact angle is set within a predetermined range, measuring the water contact angle of the surface of the intermediate layer and forming a photosensitive layer on the intermediate layer when the water contact angle is within a predetermined range. Claim 9 has been amended to insert the feature of claims 13 and 15 and more particularly points out the present invention.

The present invention is further described on page 11, wherein it is pointed out that the correlation between the residual potential of the photosensitive material and the water contact angle of the intermediate layer is previously determined. To determine its correlation,

intermediate layers having different curing degrees are formed by varying heat treatment conditions of the thermosetting resin to be selected for the purpose. After measuring the water contact angle, a photosensitive layer is formed on each of the intermediate layers under the same conditions.

Reference is made to Figure 1 which shows the correlation between the residual potential and the contact angle. With an increase in contact angle, a specific value of the contact angle such as point B, which is  $62.9^{\circ}$  in Figure 1, as a border generally divides the first correlation portion where the residual potential decreases proportionately, from the second portion where a change in the residual potential nearly disappears even if the contact angle increases.

Then a first approximate linear line which approximates the first correlation portion and a second approximate linear line which approximates the second correlation portion are made as shown in Figure 1. The first approximate linear line is made by approximation of measured values of the residual potential and the water contact angle in the first correlation proportion using a least-square method.

The second approximate linear line is made by approximation of measured guidance in a second correlation portion in the same manner as the first approximate linear line. Then a correlation curve is made by combining the first approximate linear line with the second approximate linear line.

Page 12, beginning at line 5, explains how the range for the water contact angle can be determined from the correlation curve. In the example shown, the range is from  $63.9^{\circ}$  to  $69.9^{\circ}$ .

When the contact angle is smaller than the value corresponding to the intersection -2, image fog is likely to occur.

Hence, the present invention provides a method for determining the surface of the intermediate layer with the appropriate characteristics whereby problems which have been associated with such electrophotosensitive materials in the past can be avoided.

The rejection of claims 9 – 12 under 35 U.S.C. 112 (first paragraph) is traversed and reconsideration is respectfully requested. The Official Action alleges that the specification does not reasonably provide enablement for a method as presented where the correlation of the water contact angle and the residual potential has not been previously determined. The claims have been amended to specify that a heat treatment is carried out so that the water angle is set within a predetermined range and when the water contact angle is within that predetermined range which is defined by the expression in the claims, the photosensitive layer is formed on the surface of the intermediate layer. One of the factors defining the arithmetic expression is the water contact angle corresponding to an intersection of the first approximate linear line and a second approximate linear line in a correlation curve between a residual potential of the electrosensitive material and a water contact angle of the intermediate layer. The first approximate linear line denotes an approximate linear line of a portion of said correlation curve where the residual potential decreases proportionally with an increase in water contact angle. The second approximate linear line denotes an approximate linear line of the portion of the correlation curve with a change in residual potential with an increase in contact angle nearly disappears. It is explained in the specification, particularly with reference to the example found beginning on

page 21 that such correlation curves can be created without undue experimentation and conjecture. It is correct that the correlation curve would have been previously created by a series of experiments or experimental determinations to create the data for the curve which is in use as a standard for the manufacture of an electrophotosensitive material. It is believed that the claims now clarify this matter and accordingly it is respectfully submitted that the rejection on this ground should be withdrawn.

The rejection of claims 9 to 12 under 35 U.S.C. Section 112 (second paragraph) as allegedly indefinite is traversed and reconsideration is respectfully requested.

The claims now clearly point out that a heat treatment is carried out before the measurement of the water contact angle so that the water contact angle will be set within a predetermined range. After that, the water contact angle of the surface of the intermediate layer is measured and the photosensitive layer is then deposited on the surface of the intermediate layer when the water contact angle is within a predetermined range. The predetermined range is defined by the expression set forth in claim 9. Applicant refers to the examples in the application which show how these correlation curves which are defined in claim 9 can be determined.

In summary, it is respectfully submitted that the application provides sufficient information so that the claim terminology is not indefinite. Therefore, it is respectfully submitted that the claims as amended now more particularly point out and distinctly claim applicants contribution to the art and do not involve any indefiniteness in the light of the disclosure in this application.

Divisional Pat. App. of 09/983,471  
Amdt. dated April 20, 2004

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For reasons set forth above, favorable action at the Examiner's convenience is  
resepectfully requested.

Respectfully submitted,

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